



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,284	12/03/2003	J. Scott Price	GEMS 0136 PUS	1283
27256	7590	08/02/2006	EXAMINER	
ARTZ & ARTZ, P.C. 28333 TELEGRAPH RD. SUITE 250 SOUTHFIELD, MI 48034			KAO, CHIH CHENG G	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 08/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,284

Applicant(s)

PRICE ET AL.

Examiner

Chih-Cheng Glen Kao

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10 and 12-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10,12-16,21 and 22 is/are rejected.
- 7) ☒ Claim(s) 23 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 30, 2006, has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 2, 4-9, 21, and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 1, the added limitation (i.e., "which is at a pressure that is less than the standard atmospheric pressure (1 atm)") in lines 5-6 is the claim limitation at issue. Although the specification describes an external low-pressure cavity (paragraph 25), applicant has not pointed out where the amended claim is supported, nor does there appear to be a written

Art Unit: 2882

description of the added claim limitation in the application as filed. Therefore, the claim is rejected for containing new matter. Claims 2, 4-9, 21, and 22 are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki (US 4119855) in view of Meyer et al. (US 6002202) and Yamaguchi (JP 54-151384).

4. Regarding claim 10, Bernacki discloses an apparatus comprising: a rotating (col. 3, line 7) target (fig. 2, #60) having a third voltage potential (fig. 2, #72) and decelerating electrons (fig. 2, #52) to generate x-rays (fig. 2, #62) within an imaging tube (fig. 2, #64), and an electron beam source (fig. 2, #48) external and separate from said target (fig. 2, #60) and separating a source interior (fig. 2, interior of #54) from a low-pressure cavity (fig. 2, cavity of #64) containing said target (fig. 2, #60) comprising; a source housing (fig. 2, #54) comprising; a source window (fig. 2, #58) necessarily having a first voltage potential, and a source electrode (fig. 2, #50, and col. 2, line 67) necessarily having a second voltage potential and generating said electrons (fig. 2, #52), said source electrode emitting said electrons (fig. 2, #52) through said source window (fig. 2, #58) to said target (fig. 2, #60).

However, Bernacki fails to disclose a sealed electron beam source, and a voltage potential of a window that is approximately equal to a voltage potential of a target.

Meyer et al. teaches a sealed electron beam source (title and col. 1, lines 12-15). Yamaguchi teaches a voltage potential of a window (fig. 1, #21) that is approximately equal to a voltage potential (abstract, constitution) of a target (fig. 1, #17).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the apparatus of Bernacki with the sealed source of Meyer et al., since one would be motivated to make such a modification for better isolating different environments (col. 1, lines 16-26) as shown by Meyer et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the apparatus of Bernacki with the voltage potentials of Yamaguchi, since one would be motivated to make such a modification for reducing discharge and for more stable operation (abstract) as implied from Yamaguchi.

5. Regarding claims 13 and 14, Bernacki further discloses a frame (fig. 2, #64) coupled within the imaging tube, said low-pressure cavity (fig. 2, inside #64) fluidically coupled between said frame and said target (fig. 2, #60), and at least partially defined by said frame, said target, and said electron beam source (fig. 2, #48), and said low-pressure cavity is at least partially exhausted or filled with a low-pressure gas (fig. 2, #67), wherein said low-pressure gas comprises at least one of a low-Z substance, helium (col. 3, line 14), nitrogen, or argon.

Art Unit: 2882

6. Regarding claim 15, Bernacki further discloses wherein said electron beam source (fig. 2, #48) is directed at said target (fig. 2, #60) at a glancing angle.

7. Regarding claim 16, Bernacki further discloses wherein said source window (fig. 2, #58) allows direct electron emission (fig. 2, #52) to pass through said source window (fig. 2, #58) to said target (fig. 2, #60) and necessarily prevents indirect electron emission from passing through said source window (fig. 2, #58), when indirect electron emissions impact the sides of the window.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki, Meyer et al., and Yamaguchi as applied to claim 10 above, and further in view of Barrett (US 6674838).

Bernacki as modified above suggests an apparatus as recited above.

However, Bernacki fails to disclose a coolant channel housing thermally coupled to and at least partially defined by a source housing comprising a coolant channel and a coolant flowing therein, said coolant absorbing heat from said source housing.

Barrett teaches a coolant channel housing (fig. 1, #68) thermally coupled (fig. 1, #64) to and at least partially defined by a source housing (fig. 1, #66) comprising a coolant channel (fig. 1, #68) and a coolant flowing (col. 9, line 23) therein, said coolant absorbing heat from said source housing (fig. 1, #64 and 68).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the apparatus of Bernacki as modified above with the coolant channel housing of Barrett, since one would be motivated to make such a modification to better

Art Unit: 2882

cool at specific locations compared to indirect cooling systems (col. 3, lines 62-66) for reducing thermal damage and to strengthen x-ray intensity as implied from Barrett.

Allowable Subject Matter

9. Claims 1, 2, 4-9, 21, and 22 would be allowable if applicant provides a convincing showing to overcome the rejection(s) under 35 U.S.C. 112, 1st paragraph, set forth in this Office action. Claims 17-20 are allowed. Claims 23 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter.

10. Regarding claim 1, prior art fails to disclose or fairly suggest a sealed electron beam source for an imaging tube, including a source housing comprising a non-apertured source window forming a sealed structure, that separates a source interior from an external low-pressure cavity, which is at a pressure that is less than the standard atmospheric pressure (1 atm), with said source housing and having a first voltage potential, in combination with all the limitations in the claim. Claims 2, 4-9, 21, and 22 contain allowable subject matter by virtue of their dependency.

11. Regarding claim 17, prior art fails to disclose or fairly suggest a method for supplying and directing electrons on a target within an imaging tube, including sealing a source housing from an external vacuum cavity that is within the imaging tube, and at least partially filling said

Art Unit: 2882

vacuum cavity with a low-pressure gas, in combination with all the limitations in the claim.

Claims 18-20 are allowed by virtue of their dependency.

12. Regarding claim 23, prior art fails to disclose or fairly suggest an imaging tube, including an x-ray window coupled to a frame, and a coolant channel housing coupled to said frame and cooling said x-ray window, in combination with all the limitations in the claim. Claim 24 contains allowable subject matter by virtue of its dependency.

Response to Arguments

13. Applicant's arguments filed May 30, 2006, have been fully considered but they are not persuasive.

Regarding at least claim 10, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. The combination of references suggests the claim as recited.

Applicant further argues that Bernacki and Meyer et al. fail to teach or suggest a sealed electron beam source that separates a source interior from a low-pressure cavity. The examiner disagrees. Bernacki teaches an electron beam source (fig. 2, #48) that separates a source interior (fig. 2, interior of #54) from a low-pressure cavity (fig. 2, cavity of #64). Meyer et al. teaches a sealed electron beam source (title and abstract), since the use of a thin window for vacuum applications, which are considered sealed, reads on a sealed electron beam source. Therefore,

Art Unit: 2882

the combination of references suggests a sealed (Meyer et al.) electron beam source (Bernacki) that separates a source interior from a low-pressure cavity (Bernacki).

Applicant further argues that the window of Yamaguchi is not an electron beam source window. Regardless of whether this is true or not, the examiner has not relied about Yamaguchi for teaching an electron beam source window, but for a voltage potential of a window that is approximately equal to a voltage potential of a target. The teaching of Yamaguchi applied to Bernacki would suggest and make obvious a source window of Bernacki (fig. 2, #58, which is analogous to the window (fig. 1, #21) of Yamaguchi) to have a voltage potential that is approximately equal to a voltage potential of a target, as taught by Yamaguchi (abstract, constitution). Therefore, the teaching of Yamaguchi in combination with the other references suggests and makes obvious the claim as recited.

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention.

In conclusion, applicant's arguments are not persuasive, and the references remain applicable in the claim rejections above.

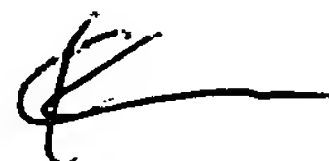
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

Art Unit: 2882

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Chih-Cheng Glen Kao
Examiner
Art Unit 2882